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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

DRAFT
GENERAL CONFORMITY DETERMINATION

GEORGE BUSH
INTERCONTINENTAL AIRPORT
HOUSTON, TEXAS

Runway 8L-26R
And Associated Near-Term
Master Plan Projects

April 2000

INTRODUCTION

The Federal Aviation Administration (FAA) has prepared these Draft General Conformity Determinations pursuant to the Clean Air Act of 1990 to consider the potential impacts resulting from the construction and operation of the proposed Runway 8L-26R and associated near-term Master Plan projects at George Bush Intercontinental Airport in Houston, Texas. (Refer to Appendix One for a map of the airport and the proposed improvements.)

The Houston Airport System (HAS) proposes the following improvements to meet forecast aviation demand, reduce airfield congestion and aircraft delay, maintain acceptable levels of passenger service, and enhance and maintain the Airport's ability to serve as a major airline connecting hub:

- **Construction of new Runway 8L-26R and associated taxiways**. This project would also include installation of visual and instrument aids to navigation and the development and/or amendment of flight procedures necessary to accommodate the new runway.

- **Extension and widening of Runway 15R-33L and associated taxiways**. This project would also include installation of visual and instrument aids to navigation and the development and/or amendment of flight procedures necessary to accommodate the runway extension.

- **Construction of the Taxiway SD bridge and associated ramp widening**. Existing air cargo facilities would be displaced to accommodate this development project. Therefore, replacement air cargo facilities are included as part of the project. These facilities would be able to accommodate additional air cargo activity.

- **Construction of a Consolidated Rental Car Facility**. The consolidated facility would replace several separate rental car facilities and provide more space for the existing rental car companies at the Airport.

- **International Services Expansion Program**. Passenger processing facilities at the Mickey Leland International Airlines Building (IAB) would be expanded to enhance and maintain levels of passenger service. In addition, this project would increase the number of air carrier gates, the amount of vehicular parking available at the IAB site, and the ramp area available for aircraft circulation and parking.

FAA has prepared draft general conformity determinations for these airport projects proposed at George Bush Intercontinental Airport. Each project is independent of the other projects and is justified and functional without the development of another project. Additional data regarding the proposed projects referenced in the FAA's draft general conformity determinations can be found in the Draft and Final Environmental Impact Statements.

These projects are located in the Houston/Galveston/Brazoria Nonattainment Area, a severe ozone nonattainment area. In a severe ozone nonattainment area, the *de minimis* thresholds for ozone precursor pollutants are 25 tons per year (tpy) of Volatile Organic Compounds (VOC) and 25 tpy of oxides of nitrogen (NOx). In addition to the *de minimis* test, a conformity determination is also required if the emission increase due to the project would equal or exceed ten percent of the total emission inventory for the entire nonattainment area. For this nonattainment area, the total annual emissions in 1999 were 352,714 tons of VOC[1] and 463,378 tons of NOx[1]. Therefore, a project would be regionally significant for purposes of General Conformity if the project increased emissions by more than 35,271 tpy of VOC or 46,338 tpy of NOx. None of these five projects are regionally significant for purposes of General Conformity.

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1 Texas Natural Resource Conservation Commission. Revisions to the State Implementation Plan for the Control of Ozone Air Pollution, Attainment Demonstration for the Houston/Galveston Ozone Nonattainment Area. Austin, Texas. 6 May 1998.

CONSTRUCTION OF RUNWAY 8L-26R

In accordance with the Section 176 of the Clean Air Act Amendments of 1990, the Federal Aviation Administration (FAA) has assessed whether the emissions that would result from the FAA's action in approving the proposed construction of Runway 8L-26R at George Bush Intercontinental Airport/Houston are in conformity with the Texas State Implementation Plan (SIP) for the Houston/Galveston/Brazoria Nonattainment Area. In making this general conformity determination, the FAA based its emission comparison on a "build versus no-build" scenario. While VOC and NOx emissions from implementing this project will not exceed *de minimis* threshold levels, construction emissions for NOx and VOC would exceed *de minimis* thresholds established by the Clean Air Act for determining whether a general conformity determination is required. Accordingly, the FAA is assessing the conformity of this project with the SIP.

BACKGROUND

The proposed new Runway 8L-26R would reduce average aircraft delays by 2.3 minutes per operation by the year 2002, resulting in annual savings of $23 million. By the year 2007, these savings would be 9.2 minutes per operation and $113 million annually. These reductions in aircraft congestion and delay over the next seven years would reduce NOx and VOC emissions compared to the no action alternative (No-Build), as described in the Draft and Final Environmental Impact Statements (EIS).

EMISSIONS INVENTORY

The FAA's Emissions Dispersion Modeling System (EDMS) program was used to develop the project-related emissions of VOC and NOx for the proposed project. Emissions of CO, SO_2, and PM10 were not estimated for this general conformity evaluation, as this area is in attainment with the Texas and National Ambient Air Quality Standards for each of those pollutants. An overall reduction in VOC and NOx emissions was estimated to occur due to the routine operations of the preferred Build Alternative, as shown in Table 1. Compared to the No-Build VOC emissions, the proposed project would reduce emissions by 15.8 tpy in 2002, 123.6 tpy in 2007, and 485.1 tpy in 2017. Compared to the No-Build NOx emissions, the Preferred Build Alternative shows an estimated reduction of 21.0 tpy in 2002, 169.8 tpy in 2007, and 957.9 tpy in 2017.

Table 1. VOC and NOx Emissions from Routine Operations

	2002 (tpy)			2007 (tpy)			2017 (tpy)		
	No-Build	With Project	Net Change	No-Build	With Project	Net Change	No-Build	With Project	Net Change
VOC	810.5	794.7	-15.8	1,003.8	880.2	-123.6	1,408.5	923.4	-485.1
NOx	3,440.7	3,419.7	-21.0	4,390.8	4,221.0	-169.8	6,270.5	5,312.6	-957.9

The 1993 Texas SIP contains emissions budgets for VOC and NOx from construction equipment. The VOC and NOx emissions due to construction of Runway 8L-26R were estimated based on the projected construction activity schedule, including the numbers of construction vehicles and equipment units and their utilization rates. Emission factors for construction vehicles and equipment were taken from United States Environmental Protection Agency (EPA) databases for non-road vehicles and engines[2]. Emission factors for haul vehicles and worker vehicles were taken from EPA's MOBILE 5b program. (See Appendix Two for supporting emissions data.)

Emissions from several components of construction activities were evaluated. These include emissions from on-site construction equipment (i.e., backhoes, bulldozers, graders, etc.); haul vehicles (i.e., cement trucks, dump trucks, etc.); and construction company worker vehicles getting to and from the site. The clearing of the area may include harvesting of the trees and hauling and/or burning of the remaining debris. The input from these activities on the emissions is based on the scenario with the highest emissions and using the most reliable data available. The construction activities for individual components of this runway project are scheduled to begin in late 2000 and extend through 2003. Therefore, emissions from these activities were identified separately in each calendar year. As shown in Table 2, NOx emissions due to construction activities associated with Runway 8L-26R are estimated to peak at 429.6 tpy in 2001. Table 3 shows that VOC emissions would peak at 550.1 tpy in 2001.

Table 2. Runway 8L-26R NOx Emissions from Construction Activities

NOx (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
212.0	429.6	76.1	76.1	0.0	0.0

Table 3. Runway 8L-26R VOC Emissions from Construction Activities

VOC (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
236.2	550.1	26.4	26.4	0.0	0.0

The emissions calculated for construction equipment activity do not reflect the reductions likely to result from the new control measures proposed by the TNRCC in the proposed SIP, dated December 19, 1999. Therefore, actual emissions from construction activity at this project may be less than the emissions used for the general conformity determination.

2 U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study - Report.* EPA 460/3-91-02. Washington, D.C. November 1991.

CONCLUSION

In determining whether a project is in conformity with the state implementation plan, the emissions from the project are compared to the allowable emissions inventory of the applicable SIP revision. The air quality analysis has demonstrated that the net annual emissions changes due to the routine operations of this project will be less than the *de minimis* threshold of 25 tpy of VOC and 25 tpy of NOx. In addition, as the changes in emissions will be less than an increase of ten percent of the VOC and NOx emissions inventories for the entire nonattainment area, the project is not regionally significant for purposes of conformity. In 2000, 2001, 2002, and 2003, the construction emissions will exceed the *de minimis* levels of 25 tpy of VOC and 25 tpy of NOx. However, emissions due to construction activities are accounted for in the 1993 Texas SIP emissions budgets for VOC and NOx.

Because the emission changes due to the project are less than the *de minimis* levels, the project is not regionally significant and the emissions due to construction are already accounted for in the SIP, the FAA has determined under the General Conformity Rule that the changes in emissions due to the project will not:

- Cause or contribute to any new violation of any of the National Ambient Air Quality Standards (NAAQS) in the Airport project area;
- Increase the frequency or severity of any existing violation of any NAAQS in the project area; or,
- Delay timely attainment of NAAQS or any required interim emission reductions in the project area.

Therefore, the FAA has determined that the proposed project complies with the requirements of the General Conformity Rule, Section 176 of the 1990 Clean Air Act Amendments and the state requirements under 30 Texas Administrative Code, Chapter 101.30 and is in conformity with the Texas SIP.

EXTENSION AND WIDENING OF RUNWAY 15R-33L

In accordance with the Section 176 of the Clean Air Act Amendments of 1990, the FAA has assessed whether the emissions that would result from the FAA's action in approving the proposed extension and widening of the commuter/general aviation Runway 15R-33L at George Bush Intercontinental Airport are in conformity with the SIP for the Houston/Galveston/Brazoria Nonattainment Area. In making the general conformity determination, the FAA based its emission comparison on a "build versus no-build" scenario. While VOC and NOx emissions from implementing this project will not exceed *de minimis* threshold levels, construction emissions for NOx and VOC would exceed *de minimis* thresholds established by the Clean Air Act for determining whether a general conformity determination is required. Accordingly, the FAA is assessing the conformity of this project with the SIP.

BACKGROUND

The proposed extension and widening of Runway 15R-33L would permit air carrier jet aircraft to use the runway for departures, in effect adding an air carrier departure runway. This improvement would increase the efficiency of the airfield by avoiding "mixed operations" (landings and takeoffs) on any runway. During peak departure periods, Runway 8-26 must also be used to accommodate some departure demand. Consequently, the spacing between arrivals on Runway 8-26 must be increased to allow for these departures. Because periods of overlapping arrival and departure demand occur throughout the day, these mixed operations increase delay for arriving aircraft. Providing an additional air carrier departure runway would reduce the need to mix landings and takeoffs on Runway 8-26.

This improvement alone would reduce delays by 1.3 minutes per operation by 2002. By 2007, these delay reductions would reach 5 minutes per operation. These reductions in aircraft congestion and delay over the next seven years would reduce NOx and VOC emissions compared to the no action alternative (No-Build).

EMISSION INVENTORY

The FAA's Emissions Dispersion Modeling System (EDMS) program was used to develop the project-related emissions of VOC and NOx for the proposed project. Emissions of CO, SO_2, and PM10 were not estimated for this general conformity evaluation, as this area is in attainment with the Texas and National Ambient Air Quality Standards for each of those pollutants. An overall reduction in VOC and NOx emissions was estimated to occur due to the routine operations of any of the Build Alternatives, as shown in Table 1. Compared to the No-Build VOC emissions, the proposed project would reduce emissions by 11.3 tpy in 2002, 58.5 tpy in 2007, and 218.5 tpy in 2017. Compared to the No-Build NOx emissions, the Preferred Build Alternative shows an estimated reduction of 15.0 tpy in 2002, 80.4 tpy in 2007, and 496.9 tpy in 2017.

Table 1. VOC and NOx Emissions from Routine Operations

	2002 (tpy)			2007 (tpy)			2017 (tpy)		
	No-Build	With Project	Net Change	No-Build	With Project	Net Change	No-Build	With Project	Net Change
VOC	810.5	799.2	-11.3	1,003.8	945.3	-58.5	1,408.5	1,190.0	-218.5
NOx	3,440.7	3,425.7	-15.0	4,390.8	4,310.4	-80.4	6,270.5	5,773.6	-496.9

The 1993 Texas SIP contains emissions budgets for VOC and NOx from construction equipment. The VOC and NOx emissions due to construction for Extension and Widening of Runway 15R-33L were estimated based on the projected construction activity schedule, including the numbers of construction vehicles and equipment units and their utilization rates. Emission factors for construction vehicles and equipment were taken from U.S. EPA databases for non-road vehicles and engines[2]. Emission factors for haul vehicles and worker vehicles were taken from EPA's MOBILE 5b program. (See Appendix Two for supporting emissions data.)

Emissions from several components of construction activities were evaluated. These include emissions from on-site construction equipment (i.e., backhoes, bulldozers, graders, etc.); haul vehicles (i.e., cement trucks, dump trucks, etc.); and construction company worker vehicles getting to and from the site. Construction activities for individual projects are scheduled to begin in late 2000 and extend through 2002. Therefore, emissions from these activities were identified separately in each calendar year. As shown in Table 2, NOx emissions due to construction activities associated with the extension and widening of Runway 15R-33L are estimated to peak at 88.3 tpy in 2001. Table 3 shows that VOC emissions would peak at 33.1 tpy in 2001.

Table 2. Runway 15R-33L NOx Emissions from Construction Activities

NO_x (tpy)					
2000	2001	2002	2003	2004	2005
52.6	88.3	24.2	0.0	0.0	0.0

2 U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study - Report.* EPA 460/3-91-02. Washington, D.C. November 1991.

Table 3. Runway 15R-33L VOC Emissions from Construction Activities

VOC (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
18.8	33.1	9.4	0.0	0.0	0.0

CONCLUSION

In determining whether a project is in conformity with the state implementation plan, the emissions from the project are compared to the allowable emissions inventory of the applicable SIP revision. The air quality analysis has demonstrated that the net annual emissions changes due to the routine operations of this project will be less than the *de minimis* threshold of 25 tpy of VOC and 25 tpy of NOx. In addition, as the changes in emissions will be less than an increase of ten percent of the VOC and NOx emissions inventories for the entire nonattainment area, the project is not regionally significant for purposes of conformity. In 2000 and 2001, the construction emissions will exceed the *de minimis* threshold levels of 25 tpy of VOC and 25 tpy of NOx. However, emissions due to construction activities are accounted for in the 1993 Texas SIP emissions budgets for VOC and NOx.

Because the operational emission changes due to the project are less than the *de minimis* levels; the project is not regionally significant; and the emissions due to construction are already accounted for in the SIP; FAA has determined under the General Conformity Rule that the changes in emissions due to the project will not:

- Cause or contribute to any new violation of any of the National Ambient Air Quality Standards (NAAQS) in the Airport project area;
- Increase the frequency or severity of any existing violation of any NAAQS in the project area; or,
- Delay timely attainment of NAAQS or any required interim emission reductions in the project area.

Therefore, the FAA has determined that the proposed project complies with the requirements of the General Conformity Rule, Section 176 of the 1990 Clean Air Act Amendments and the state requirements under 30 Texas Administrative Code, Chapter 101.30 and is in conformity with the Texas SIP.

TAXIWAY SD BRIDGE, RAMP WIDENING AND AIR CARGO DEVELOPMENT

In accordance with the Section 176 of the Clean Air Act Amendments of 1990, the Federal Aviation Administration (FAA) has assessed whether the emissions that would result from the FAA's action in approving the proposed construction of the Taxiway SD Bridge, associated ramp and a new cargo facility at George Bush Intercontinental Airport are in conformity with the SIP for the Houston/Galveston/Brazoria Nonattainment Area. In making the general conformity determination, the FAA based its emission comparison on a "build versus no-build" scenario. While VOC and NOx emissions from implementing this project will not exceed *de minimis* threshold levels, construction emissions for NO_x would exceed *de minimis* thresholds established by the Clean Air Act for determining whether a general conformity determination is required. Accordingly, the FAA is assessing the conformity of this project with the SIP.

BACKGROUND

Taxiway SD Bridge. The Taxiway SD Bridge and Terminal AB ramp widening would eliminate a choke point between the two terminal ramp areas on the south side of the terminal complex. At present, only one taxiway connects these ramp areas. Consequently, aircraft taxiing to or from the eastern terminal complex (Terminal C and the International Airlines Building) must often wait for aircraft taxiing in the opposite direction. This project would also enhance circulation for aircraft landing on Runway 26 which are destined for the south side of Terminal C. The Taxiway SD bridge and expansion of the Terminal AB ramp would provide a bypass taxiway to accommodate these and other ground movements. The taxiway SD bridge and the associated Terminal AB ramp expansion are proposed to reduce current ground congestion and delay, and would have a beneficial effect on air quality.

Replacement Air Cargo Facilities. The initial requirement for air cargo development is to relocate facilities displaced by construction of the Taxiway SD Bridge. Since the new air cargo area is required for relocation of existing users, this facility must be completed prior to the initiation of the Taxiway SD Bridge and associated airfield circulation improvements. The air cargo facilities that would be displaced by the Taxiway SD project are part of a larger air cargo area. Therefore, a one-for-one replacement of aircraft ramp area at a new location would not provide the aircraft circulation space required to accommodate the activity which would be displaced. Although the new air cargo area could accommodate more air cargo development than is being displaced, no additional users have been identified at this time. The proposed new air cargo area would provide space for forecast growth in air cargo demand, although it should be noted that such demand could be accommodated elsewhere on the airport or though increased use of off-airport freight forwarders, etc.

EMISSIONS INVENTORY

Although the proposed project would reduce airfield delay and associated aircraft emissions, quantification of these delay reductions requires more detailed information on ramp area operations than is available. As a conservative estimate, it is assumed that no change in

emissions would occur as a result of the proposed action. Accordingly, emissions from routine operation of the proposed action would not exceed *de minimis* levels.

The 1993 Texas SIP contains emissions budgets for VOC and NOx from construction equipment. The VOC and NOx emissions due to construction of this project were estimated based on the projected construction activity schedule, including the numbers of construction vehicles and equipment units and their utilization rates. Emission factors for construction vehicles and equipment were taken from U.S. EPA databases for non-road vehicles and engines[2]. Emission factors for haul vehicles and worker vehicles were taken from EPA's MOBILE 5b program. (See Appendix Two for supporting emissions data.)

Emissions from several components of construction activities were evaluated. These include emissions from on-site construction equipment (i.e., backhoes, bulldozers, graders, etc.); haul vehicles (i.e., cement trucks, dump trucks, etc.); and construction company worker vehicles getting to and from the site. The clearing of the area may include harvesting of the present trees and hauling and/or burning of the remaining trees. The input from these activities on the emissions is based on the scenario with the highest emissions and using the most reliable data available. Construction activities for individual components are scheduled to begin in late 2000 and extend through 2003. Therefore, emissions from these activities were identified separately in each calendar year. As shown in Table 1, NOx emissions due to construction activities associated with this project is estimated to peak at 253.8 tpy in 2001. Table 2 shows that VOC emissions would peak at 88.4 tpy in 2001.

Table 1. Taxiway SD NO_x Emissions from Construction Activities

NOx (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
143.1	253.8	76.3	42.8	0.0	0.0

Table 2. Taxiway SD VOC Emissions from Construction Activities

VOC (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
66.4	88.4	30.7	17.5	0.0	0.0

[2] U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study - Report.* EPA 460/3-91-02. Washington, D.C. November 1991.

CONCLUSION

In determining whether a project is in conformity with the state implementation plan, the emissions from the project are compared to the allowable emissions inventory of the applicable SIP revision. The air quality analysis has demonstrated that the net annual emissions changes due to the routine operations of this project will be less than the *de minimis* threshold of 25 tpy of VOC and 25 tpy of NOx. In addition, as the changes in emissions will be less than an increase of ten percent of the VOC and NOx emissions inventories for the entire nonattainment area, the project is not regionally significant for purposes of conformity. In 2000, 2001, and 2002, the construction emissions will exceed the *de minimis* threshold levels of 25 tpy of VOC and 25 tpy of NOx. In 2003, the construction emissions will exceed *de minimis* level of 25 tpy of NOx. However, emissions due to construction activities are accounted for in the 1993 Texas SIP emissions budgets for VOC and NOx.

As the emission changes due to the project are less than the *de minimis* levels, and the project is not regionally significant, FAA has determined under the General Conformity Rule that the changes in emissions due to this project will not:

- Cause or contribute to any new violation of any of the National Ambient Air Quality Standards (NAAQS) in the Airport project area;
- Increase the frequency or severity of any existing violation of any NAAQS in the project area; or,
- Delay timely attainment of NAAQS or any required interim emission reductions in the project area.

Therefore, the FAA has determined that the proposed project complies with the requirements of the General Conformity Rule, Section 176 of the 1990 Clean Air Act Amendments and the state requirements under 30 Texas Administrative Code, Chapter 101.30 and is in conformity with the Texas SIP.

CONSOLIDATED CAR RENTAL FACILITY

In accordance with the Section 176 of the Clean Air Act Amendments of 1990, the Federal Aviation Administration (FAA) has assessed whether the emissions that would result from the FAA's action in approving the proposed construction of a consolidated rental car facility at George Bush Intercontinental Airport are in conformity with the SIP for the Houston/Galveston/Brazoria Nonattainment Area. In making the general conformity determination, the FAA based its emission comparison on a "build versus no-build" scenario. While VOC and NOx emissions from implementing this project will not exceed *de minimis* threshold levels, construction emissions for VOC and NOx would exceed *de minimis* thresholds established by the Clean Air Act for determining whether a general conformity determination is required. Accordingly, the FAA is assessing the conformity of this project with the SIP.

BACKGROUND

The consolidated rental car facility would provide the optimal means of meeting current and future demand for rental car facilities. This project would replace several existing separate rental car facilities with a larger single consolidated facility. By consolidating users and mandating a single transport system, the project would reduce the number of rental car shuttles needed to serve the terminal area. In addition, this facility would be closer to the major off-airport origins and destinations, thus further reducing on-airport vehicular traffic. If this consolidated facility were not constructed, demand for rental cars could continue to be served, but with a lower quality of service to the passenger and increased congestion on airport roadways. Demand would be served because operators would either maximize efficiency of their individual operation at the expense of the roadway network, construct additional off-airport facilities, or both. For example, on-airport rental car operators facing a shortage of space could split operations to provide additional storage and maintenance facilities at an off-airport location. This approach would entail greater use of shuttles, unnecessary vehicular movements, and transfers of rental cars to maintain acceptable levels of customer service.

EMISSIONS INVENTORY

Although the proposed project would reduce roadway congestion and reduce vehicle miles traveled, these reductions cannot be quantified at this time. Actual reductions compared to the no action alternative would depend upon the actions taken by individual rental car agencies in response to increasing congestion. As a conservative estimate, it is assumed that no change in vehicular emissions would occur as a result of the proposed action. Accordingly, emissions from routine operation of the proposed action would not exceed *de minimis* thresholds.

The 1993 Texas SIP contains emissions budgets for VOC and NOx from construction equipment. The VOC and NOx emissions due to construction of the consolidate rental car facility were estimated based on the projected construction activity schedule, including the numbers of construction vehicles and equipment units and their utilization rates. Emission

factors for construction vehicles and equipment were taken from U.S. EPA databases for non-road vehicles and engines. Emission factors for haul vehicles and worker vehicles were taken from EPA's MOBILE 5b program. (See Appendix Two for supporting data.)

Emissions from several components of construction activities were evaluated. These include emissions from on-site construction equipment (i.e., backhoes, bulldozers, graders, etc.); haul vehicles (i.e., cement trucks, dump trucks, etc.); and construction company worker vehicles getting to and from the site. The clearing of the area may include harvesting of the present trees, hauling and/or burning of the remaining trees. The input from these activities on the emissions is based on the scenario with the highest emissions and using the most reliable data available. Construction activities for these proposed projects are scheduled to begin in late 2000 and extend through 2001. Therefore, emissions from these activities were identified separately in each calendar year. As shown in Table 1, NOx emissions due to construction activities associated with the construction of the consolidated rental car facility is estimated to be 54.3 tpy in 2000 and 51.8 tpy. in 2001. Table 3 shows that VOC emissions are estimated to be 29.1 tpy in 2000 and 13.8 tpy in 2001.

Table 1. Consolidated Rental Car Facility NOx Emissions from Construction Activities

NOx (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
54.3	51.8	0.0	0.0	0.0	0.0

Table 2. Consolidated Rental Car Facility VOC Emissions from Construction Activities

VOC (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
29.1	13.8	0.0	0.0	0.0	0.0

CONCLUSION

In determining whether a project is in conformity with the state implementation plan, the emissions from the project are compared to the allowable emissions inventory of the applicable SIP revision. The air quality analysis has demonstrated that the net annual emissions changes due to the routine operations of this project will be less than the *de minimis* threshold of 25 tpy of VOC and 25 tpy of NOx. In addition, as the changes in emissions will be less than an increase of ten percent of the VOC and NOx emissions inventories for the entire nonattainment area, the project is not regionally significant for purposes of conformity.

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2 U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study - Report.* EPA 460/3-91-02. Washington, D.C. November 1991.

In 2000 and 2001 the construction emissions will exceed the *de minimis* threshold levels of 25 tpy of VOC and 25 tpy of NOx. However, emissions due to construction activities are accounted for in the 1993 Texas SIP emissions budgets for VOC and NOx.

As the emission changes due to the project are less than the *de minimis* levels, and the project is not regionally significant, FAA has determined under the General Conformity Rule that the changes in emissions due to the project will not:

- Cause or contribute to any new violation of any of the National Ambient Air Quality Standards (NAAQS) in the Airport project area;
- Increase the frequency or severity of any existing violation of any NAAQS in the project area; or,
- Delay timely attainment of NAAQS or any required interim emission reductions in the project area.

Therefore, the FAA has determined that the proposed project complies with the requirements of the General Conformity Rule, Section 176 of the 1990 Clean Air Act Amendments and the state requirements under 30 Texas Administrative Code, Chapter 101.30 and is in conformity with the Texas SIP.

INTERNATIONAL SERVICES EXPANSION PROGRAM

In accordance with the Section 176 of the Clean Air Act Amendments of 1990, the Federal Aviation Administration (FAA) has assessed whether the emissions that would result from the FAA's action in approving the proposed construction of the proposed International Services Expansion Program at George Bush Intercontinental Airport are in conformity with the Texas State Implementation Plan (SIP) for the Houston/Galveston/Brazoria Nonattainment Area. In making the general conformity determination, the FAA based its emission comparison on a "build versus no-build" scenario. While VOC and NOx emissions from implementing this project will not exceed *de minimis* threshold levels, construction emissions for NO_x would exceed *de minimis* thresholds established by the Clean Air Act for determining whether a general conformity determination is required. Accordingly, the FAA is assessing the conformity of this project with the SIP.

BACKGROUND

The proposed expansion program would enhance the services provided within the International Airlines Building (IAB) site. Additional passenger-handling facilities would help to maintain efficient passenger handling service levels in response to continued growth in passenger traffic. The proposed International Services Expansion Program (ISEP) improvements address current and short-term needs, which should be met without any increase in airfield capacity. Since the HAS would construct this project with or without development of the proposed runway improvements, this project is independent of the proposed runway improvements.

Additional Air Carrier Aircraft Gates. The ISEP would provide 15 additional "narrow body equivalent" air carrier jet, or "contact," gates, an increase of 18 percent in the number of air carrier aircraft jet gates at the airport. Without these gates, growth in passenger activity could be accommodated with some loss in efficiency and passenger service levels. A survey of large connecting hub airports indicates that gate utilization average 4 to 8 departures per gate daily. At George Bush Intercontinental Airport average gate utilization is approximately 4.9 aircraft per day, indicating that substantial growth in passenger activity could be accommodated with the existing gates. In addition, the lack of contact gates can lead to the use of remote gates or "hard stands" which require the use of transporters or shuttles to transfer passengers between the terminal and remotely parked aircraft. (Additional gate utilization information can be found in the EIS.)

Parking Structure. Approximately 2,500 parking spaces would be provided in a new parking structure, an increase of approximately 1,600 spaces compared to the current surface parking lots. In the absence of these additional parking spaces, origin and destination (O&D) passengers would have several options for reaching the airport. These options include use of (1) off-airport parking, (2) transit, (3) taxis, and (4) drop-off. Increased drop-off traffic is of particular concern because drop-off trips essentially double the vehicle-miles-traveled (VMT) for each drop-off passenger compared to a passenger using a private automobile and parking. Experience at parking constrained airports indicates that drop-off traffic increases as the availability of close in parking decreases. Airports having the lowest percentage of

close-in parking transactions experienced roughly twice as much curbside activity as did the airports with the highest proportion of close-in parking transactions. For this discussion, close-in parking is defined as being within walking distance of the terminal complex, meaning that no mode change between the parking facility and the terminal is required. Curbside use indicates that passengers were dropped off at the curbside by private automobile. Accordingly, not providing additional close-in parking as proposed would cause increased vehicular activity and congestion at the curbside and on the airport access routes.

Terminal Facilities. The remaining terminal and roadway improvements consist of reallocating terminal space and expanding terminal facilities to relocate and expand the Federal Inspection Station (FIS), remodel the space vacated by the FIS, provide additional ticket counters, and enhance pedestrian circulation within the terminal. Additional improvements would reconfigure the curbside to accommodate the relocated FIS. In the absence of these improvements, international passengers would experience increasing levels of congestion in the FIS and other areas of the terminal and terminal roadways.

EMISSIONS INVENTORY

Although the proposed project would reduce aircraft congestion and delay in the terminal area and would reduce vehicle miles traveled when compared with the no action alternative, these reductions can not be quantified at this time. Actual reductions compared to the no action alternative would depend upon the actions taken by individual airlines in response to terminal congestion and by originating passengers responding to shortages in terminal area parking. As a conservative estimate, it is assumed that no change in vehicular emissions would occur as a result of the proposed action. Accordingly, emissions from routine operation of the proposed action would not exceed *de minimis* levels.

The 1993 Texas SIP contains emissions budgets for VOC and NOx from construction equipment. The VOC and NOx emissions due to the ISEP project were estimated based on the projected construction activity schedule, including the numbers of construction vehicles and equipment units and their utilization rates. Emission factors for construction vehicles and equipment were taken from U.S. EPA databases for non-road vehicles and engines[2]. Emission factors for haul vehicles and worker vehicles were taken from EPA's MOBILE 5b program. (See Appendix Two for supporting emissions data.)

Emissions from several components of construction activities were evaluated. These include emissions from on-site construction equipment (i.e., backhoes, bulldozers, graders, etc.); haul vehicles (i.e., cement trucks, dump trucks, etc.); and construction company worker vehicles getting to and from the site. Construction activities for individual projects are scheduled to begin in late 2000 and extend through 2005. Therefore, emissions from these activities were identified separately in each calendar year. As shown in Table 1, NOx emissions due to construction activities associated with the construction of the ISEP improvements are

2 U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study - Report.* EPA 460/3-91-02. Washington, D.C. November 1991.

estimated to peak at 100.5 tpy in 2003. Table 2 shows that VOC emissions would peak at 38.3 tpy in 2003.

Table 1. ISEP NOx Emissions from Construction Activities

NOx (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
9.5	96.4	100.5	29.5	6.9	2.0

Table 2. ISEP VOC Emissions from Construction Activities

VOC (tpy)					
2000	**2001**	**2002**	**2003**	**2004**	**2005**
3.0	35.1	38.3	14.2	5.3	1.6

CONCLUSION

In determining whether a project is in conformity with the state implementation plan, the emissions from the project are compared to the allowable emissions inventory of the applicable SIP revision. The air quality analysis has demonstrated that the net annual emissions changes due to the routine operations of this project will be less than the *de minimis* threshold levels of 25 tpy of VOC and 25 tpy of NOx. In addition, as the changes in emissions will be less than an increase of ten percent of the VOC and NOx emissions inventories for the entire nonattainment area, the project is not regionally significant for purposes of conformity. In 2001, 2002, and 2003, the construction emissions will exceed *de minimis* level of 25 tpy of VOC and 25 tpy of NOx. However, emissions due to construction activities are accounted for in the 1993 Texas SIP emissions budgets for VOC and NOx.

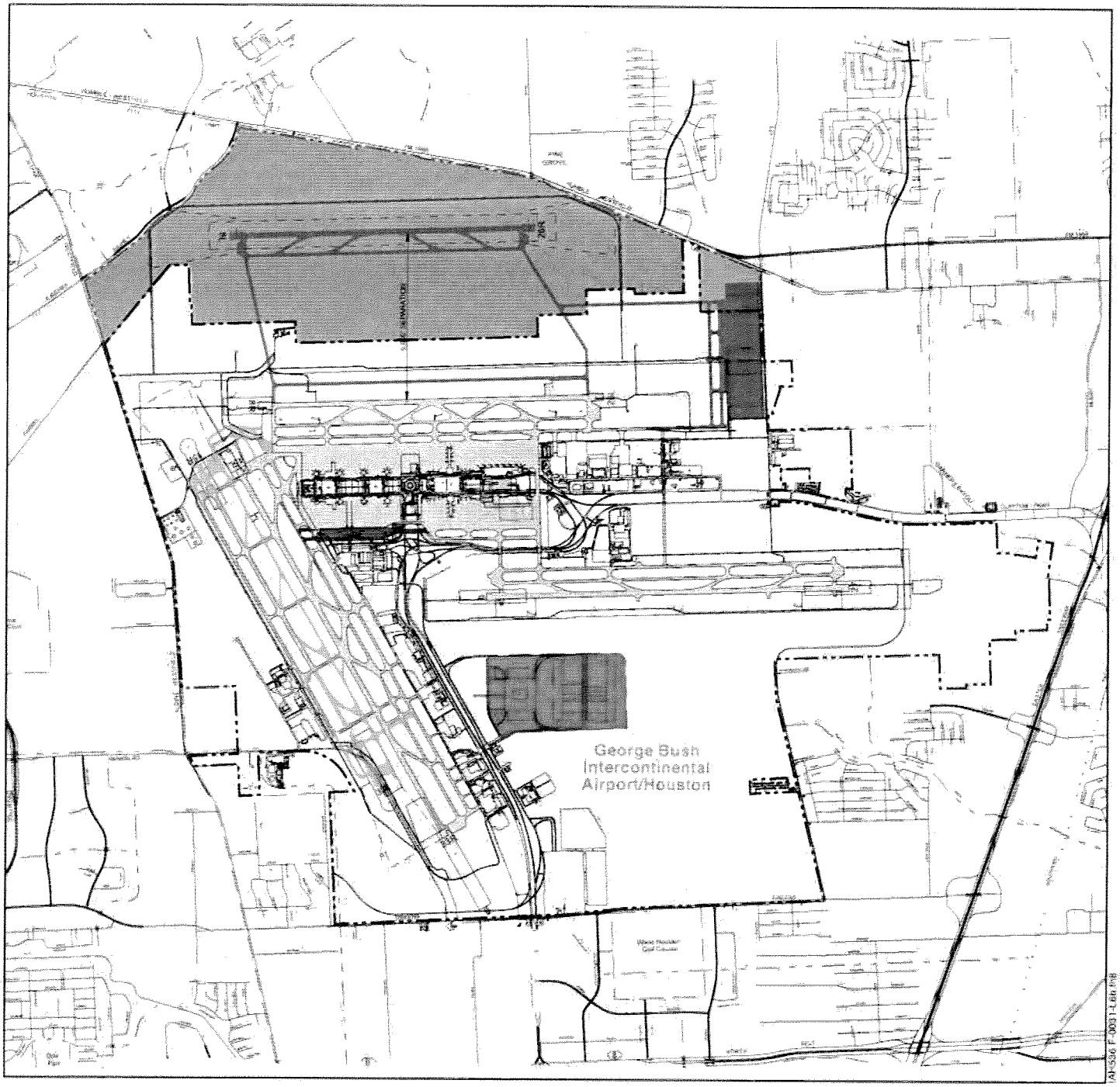
As the emission changes due to the project are less than the *de minimis* levels, and the project is not regionally significant, FAA has determined under the General Conformity Rule that the changes in emissions due to the project will not:

- Cause or contribute to any new violation of any of the National Ambient Air Quality Standards (NAAQS) in the Airport project area;
- Increase the frequency or severity of any existing violation of any NAAQS in the project area; or,
- Delay timely attainment of NAAQS or any required interim emission reductions in the project area.

Therefore, the FAA has determined that the proposed project complies with the requirements of the General Conformity Rule, Section 176 of the 1990 Clean Air Act Amendments and the state requirements under 30 Texas Administrative Code, Chapter 101.30 and is in conformity with the Texas SIP.

Map of George Bush Intercontinental Airport

Appendix One



LEGEND

- Taxiway SD bridge, ramp widening, and air cargo facilities
- Land acquisition for air cargo facilities
- Consolidated rental car facilities
- International Services Expansion Program
- New Runway 8L-26R
- Land acquisition for new Runway 8L-26R
- Runway 15R-33L extension and widening

N

2,250 0 2,250 4,500

Graphic Scale in Feet

ALTERNATIVE B/C.4:
EXTEND AND WIDEN RUNWAY 15R-33L AND CONSTRUCT NEW RUNWAY 8L-26R

EIS for Runway 8L-26R and
Associated Near-Term Master Plan Projects
George Bush Intercontinental Airport/Houston

November 1999

Federal Aviation Administration
Proposed Draft General Conformity Determination
George Bush Intercontinental Airport

Supporting Emission Data

Appendix Two

CALCULATION OF CONSTRUCTION EMISSIONS

Construction emissions were calculated for each of the projects proposed at George Bush Intercontinental Airport/Houston. Emissions from several components of construction activities were evaluated for each project. These include emissions from the on-site construction equipment (backhoes, bulldozers, graders, etc.); haul vehicles (cement trucks, dump trucks, etc.); and construction company worker vehicles getting to and from the site. The clearing of the area may include harvesting trees for lumber, hauling debris to a landfill, and/or burning debris on-site. The construction emissions analyses for all projects assume that the site clearing method resulting in the highest emissions is used.

Construction activities for individual projects are scheduled to begin in late 2000 and extend through 2003. Therefore, emissions from these activities were identified separately in each calendar year. Because the Houston-Galveston area is in non-attainment for ozone, *de minimis* levels apply to ozone precursors, specifically VOCs and NO_X. The following table summarizes the construction emissions of the individual projects for NO_X and VOC. Because VOC and NO_X emissions from each of the construction projects under consideration would exceed the *de minimis* thresholds at some time during the construction period, the SIP budget for construction-related emissions was analyzed.

According to the last published SIP, the NO_X emissions budget for construction equipment in the Houston, Galveston, Brazoria non-attainment area is 37,230 tons per year in 2007. Somewhat lower regional totals are included in the SIP emissions budget in 2000 through 2005. Construction activity associated with all of the proposed projects at the Airport would generate a maximum of nearly 920 tons of NO_X in 2001, about 2% of the construction vehicle NO_X emissions budget for 2007. As shown in Table 1, construction emissions for the combined projects would be substantially lower during the remainder of the construction period.

The VOC emissions budget for construction equipment in the Houston, Galveston, Brazoria non-attainment area is 4,380 tons per year in 2007. Somewhat lower regional totals are included in the SIP emissions budget in 2000 through 2005. Construction activity associated with all of the proposed projects at the Airport would generate a maximum of nearly 721 tons of VOC in 2001, about 16% of the construction vehicle VOC emissions budget for 2007. As shown in Table 1, construction emissions for the combined projects would be substantially lower during the remainder of the construction period.

Construction activity was estimated for each project over the total construction period. Construction emissions were estimated based on the projected construction activity schedule, including the number of construction vehicles and equipment units as well as their utilization rates. Emissions factors for construction vehicles and equipment were taken from EPA databases for non-road vehicles and engines. Table 2 lists the equipment and emissions factors used in the analysis of construction emissions.

TABLE 1
CONSTRUCTION EMISSIONS SUMMARY
George Bush Intercontinental Airport/Houston
(tons per year)

	2000		2001		2002		2003		2004		2005	
	NO_x	VOC	NO_x	VOC	NO_x	VOC	NO_x	VOC	NO_x	VOC	NO_x	VOC
Runway 15R-33L	52.6	18.8	88.3	33.1	24.2	9.4	0.0	0.0	0.0	0.0	0.0	0.0
Runway 8L-26R	212.0	236.2	429.6	550.1	76.1	26.4	76.1	26.4	0.0	0.0	0.0	0.0
Taxiway SD / Air Cargo	143.1	66.4	253.8	88.4	76.3	30.7	42.8	17.5	0.0	0.0	0.0	0.0
Consolidated Rental Car Facility	54.3	29.1	51.8	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ISEP	9.5	3.0	96.4	35.1	100.5	38.3	29.5	14.2	6.9	5.3	2.0	1.6
Total	471.5	353.5	919.9	720.5	277.1	104.8	148.4	58.1	6.9	5.3	2.0	1.6

Note: *De minimis* levels for VOC and NO_x are 25 tons per year.

Sources: KM Chng Environmental (emissions estimates) and Brown & Root, Inc. (construction activity estimates), April 2000.

TABLE 2
EQUIPMENT EXHAUST EMISSION RATES CALCULATION
George Bush Intercontinental Airport/Houston

Equipment (Project specified)	Equivalent Equipment (Used for emissions)	Fuel	Operational Data: Avg. Power Rating (hp)	Operational Data: Usage Factor	Exhaust Emission Factors (g/bhp-hr) Source: NEVES unless noted: NOx*	VOC*	CO	PM	SO2	Equipment Exhaust Emission Rates (g/hr) For Specified Power and Usage Factors: NOx*	VOC*	CO	PM	SO2
3/4 C.Y. Backhoe/Loader	Tractors/Loaders/Backhoes	D	60	0.30	4.90	0.69	6.8	1.05	0.85	88.20	12.42	122.40	18.90	15.30
1-1/4 C.Y. Backhoe/Loader	Tractors/Loaders/Backhoes	D	80	0.45	4.90	0.69	6.8	1.05	0.85	176.40	24.84	244.80	37.80	30.60
1-3/4 C.Y. Backhoe/Loader	Tractors/Loaders/Backhoes	D	112	0.50	4.31	0.61	6.8	1.05	0.85	241.36	34.16	380.80	58.80	47.60
3-3/4 C.Y. Backhoe/Loader	Tractors/Loaders/Backhoes	D	190	0.30	4.31	0.61	6.8	1.05	0.85	245.67	34.77	387.60	59.85	48.45
25 Ton Sheepsfoot Roller	Roller	D	130	0.30	4.31	0.61	3.1	0.78	1	168.09	23.79	120.90	30.42	39.00
9 Ton Vib. Stl.Drum Roller	Roller	D	300	0.30	4.18	0.59	3.1	0.78	1	376.20	53.10	279.00	70.20	90.00
9 Ton Pneumatic Tire Roller	Roller	D	300	0.30	4.18	0.59	3.1	0.78	1	376.20	53.10	279.00	70.20	90.00
Bulldozer	Crawler Tractors	D	300	0.70	4.18	0.59	4.8	1.11	0.85	877.80	123.90	1008.00	233.10	178.50
12 C.Y. Dump Truck	Off-Highway Trucks	D	300	0.80	4.18	0.59	2.3	0.3	0.89	1003.20	141.60	552.00	72.00	213.60
Sweeper	Sweepers/Scrubbers	D	100	0.60	4.31	0.61	6.06	1.6	0.93	258.60	36.60	363.60	96.00	55.80
Front End Loader	Tractors/Loaders/Backhoes	D	105	0.50	4.31	0.61	6.8	1.05	0.85	226.28	32.03	357.00	55.13	44.63
Scraper	Scrapers	D	112	0.30	4.31	0.61	5	1.26	0.9	144.82	20.50	168.00	42.34	30.24
Maintainer	Graders	D	112	0.70	4.31	0.61	3.8	1	0.12	337.90	47.82	297.92	78.40	9.41
Track Hoe	Excavators	D	300	0.43	4.18	0.59	5.2	0.7	0.93	539.22	76.11	670.80	90.30	119.97
Reclaimer/Stabilizer	Other Construction Equipment	D	190	0.30	4.31	0.61	9.2	1.44	0.93	245.67	34.77	524.40	82.08	53.01
Generator	Generator Set < 50 hp, 4-stroke	G	25	0.74	2.03	9.50	353	0.06	0.27	37.56	175.75	6530.50	1.11	5.00
Water Truck	Off-Highway Trucks	D	200	0.66	4.31	0.61	2.3	0.3	0.89	568.92	80.52	303.60	39.60	117.48
Pickup Truck	Tractors/Loaders/Backhoes	G	200	0.60	4.31	0.61	198	0.06	0.25	517.20	73.20	23760.00	7.20	30.00
Concrete Saw	Concrete/Industrial Saws, 4-stroke	G	60	0.68	4.9	0.69	198	0.06	0.25	199.92	28.15	8078.40	2.45	10.20
Slipform Paver	Concrete Paver	D	325	0.70	4.18	0.59	4.57	0.9	0.93	950.95	134.23	1039.68	204.75	211.58
Material Transfer/Placer	Off-Highway Trucks	D	300	0.70	4.18	0.59	2.3	0.3	0.89	877.80	123.90	483.00	63.00	186.90
Cement Mixer	Cement and Mortar Mixers	D	300	0.56	4.18	0.59	4.6	0.9	0.93	702.24	99.12	772.80	151.20	156.24
Crane	Cranes	D	300	0.43	4.18	0.59	4.2	1.44	0.93	539.22	76.11	541.80	185.76	119.97
										0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00	0.00

NOTES:
Fuel column codes: D=diesel, G=gasoline.
Source for horsepower and uage factor: Quadrant Consultants data for IAS.
Source for emission factors unless otherwise noted: USEPA, Nonroad Engine and Vehicle Emission Study - Report (NEVES), EPA 460/3-91-02, 11/91, Tables 2-04 and 2-07.
Sulfur in fuel: NEVES data, not project-specific.

* NOx and VOC emission factors correspond to Tier 1 standards in 40 CFR 89.112 (Federal Register 63:205, p. 57001, 10/23/98),
using same assumptions as Houston Hobby Airport EIS, as follows, except used NEVES if no Tier 1 Std.(Hobby used AP42 for uncontrolled industrial engines).

Tier 1 Emission Rates

Fuel	Rated Power (hp)	NOx (g/kW-hr)	NOx (g/hp-hr)	VOC (g/kW-hr)	VOC (g/hp-hr)
Diesel	< 50	--	--	--	--
Diesel	50 >= hp < 175	9.2	6.86	--	--
Diesel	>= 175	9.2	6.86	1.3	0.969
Gasoline	All	--	--	--	--

Comments and Notices

Appendix Three

PUBLIC NOTICE

The Federal Aviation Administration (FAA) has prepared five DRAFT General Conformity Determination to consider the potential impacts resulting from the construction and operation of proposed Runway 8L-26R and associated near-term Master Plan projects at George Bush Intercontinental Airport/ Houston. These projects include Runway 8L-26R and associated taxiways, Extension and widening of Runway 15R-33L and associated taxiways, Taxiway SD bridge and associated ramp widening, Consolidated Rental Car Facility, International Services Expansion Program. The FAA is required to meet the Clean Air Act general conformity requirements under 40 Code of Federal Regulations, Part 93, Subpart B for the Federal action for this undertaking and the state requirements under 30 Texas Administrative Code, Chapter 101.30.

The DRAFT General Conformity Determination is available for public inspection starting Monday, May 1, 2000, and ending Wednesday, May 31, 2000. Comments will be accepted during this 30-day period. The documents are available at the following locations during regular business hours:

1. Texas Airports Development Office, Southwest Regional Headquarters, Federal Aviation Administration, 2601 Meacham Boulevard, Fort Worth, Texas 76137
2. Houston Airports System, Administrative Offices, 16930 Kennedy Boulevard, Houston, Texas 77032
3. Houston Central Public Library, 500 McKinney, Houston, Texas 77002
4. Harris County Library, Aldine Branch, 11331 Airline, Houston, Texas 77060
5. Harris County Library, Baldwin Boettcher Branch, 22248 Aldine-Westfield Road, Humble, Texas 77338
6. Harris County Library, High Meadows Branch, 4500 Aldine Mail Road, Houston, Texas 77039
7. Harris County Library, Kingwood Branch, 4102 Rustic Woods Drive, Kingwood, Texas 77339
8. Harris County Library, Octavia Fields Branch, 111 W Higgins, Humble, Texas 77338
9. Harris County Library, Cypress Creek Branch, 6815 Cypresswood Drive, Spring, Texas 77379

Comments may be addressed to:

Ms. Nan L. Terry
Airports Environmental Specialist
Federal Aviation Administration
Texas Airports Development Office (ASW-652B)
2601 Meacham Blvd.
Fort Worth, TX 76137-4298
Telephone: (817) 222-5607
FAX: (817) 222-5989
EMAIL: nan.l.terry@faa.gov